



## Genes involved in isoprenoid compound production

**Description of Technology:** This invention is in the field of microbiology. More specifically, this invention pertains to nucleic acid fragments encoding enzymes useful for microbial production of isoprenoid compounds.

### Patent Listing:

1. **US Patent No. 7,034,140**, Issued April 25, 2006, "Genes involved in isoprenoid compound production"

<http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=%2Fnetacgi%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&d=PTXT&s1=7,034,140&OS=7,034,140&RS=7,034,140>

**Market Potential:** Isoprenoids are an extremely large and diverse group of natural products that have a common biosynthetic origin, a single metabolic precursor, isopentenyl diphosphate (IPP). Isoprenoids includes all substances that are derived biosynthetically from the 5-carbon compound IPP (Spurgeon and Porter, Biosynthesis of Isoprenoid Compounds, pp 3 46, A Wiley-Interscience Publication (1981)). Some isoprenoids are also referred to as "terpenes" or "terpenoids". Isoprenoids are ubiquitous compounds found in all living organisms. Some of the well-known examples of isoprenoids are steroids (triterpenes), carotenoids (tetraterpenes), and squalene just to name a few.

Although many genes needed for isoprenoid and carotenoid synthesis have been characterized, the genes involved in the isoprenoid and/or carotenoid pathways in *Rhodococcus* bacteria are not described in the existing literature. There are many pigmented *Rhodococcus* bacteria which suggests that the ability to produce carotenoid pigments is widespread in these bacteria.

The problem to be solved therefore is to isolate the sequences responsible for isoprenoid biosynthesis in *Rhodococcus* for their eventual use in isoprenoid and carotenoid production. Applicants have solved the stated problem by isolating a nucleic acid fragment from a *Rhodococcus erythropolis* AN12 strain containing 10 open reading frames (ORFs) encoding enzymes involved in isoprenoid synthesis.

### Benefits:

- Isolates genes involved in isoprenoid compound production

### Applications:

- Microbiology

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